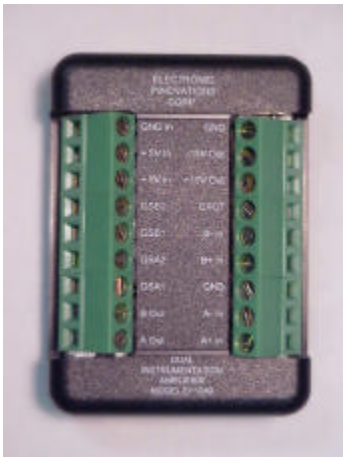
DUAL PROGRAMMABLE GAIN INSTRUMENTATION AMPLIFIER
ONE 5-VOLT SUPPLY REQUIRED



DESCRIPTION

The EI-1040 is a dual programmable gain instrumentation amplifier with a precision reference output for bridge excitation. Gains are digitally selected at values of 1, 10, 100, and 1000. Four TTL or CMOS- compatible address lines individually select the amplifier gains.

Applications of this device are for signal conditioning and amplification of low-level signals such as thermocouples and transducers. This device is also used in conditioning signals to be transmitted over a long distance to single ended receivers.

The EI-1040 requires +5 volts DC at a nominal 0.1 amp. An internal DC to DC converter supplies an output of +15 and –15 volts nominal. The EI-1040 consists of 2 Burr-Brown/TI PGA204 amplifiers and one DCP010515DPB DC to DC converter.

A 4.096 volt reference is provided for connection to a bridge or other device requiring excitation. The maximum allowable current draw from this source is 5 ma.

The EI-1040 can be attached to the LabJack by simply connecting the power and amplifier outputs to the LabJack. When connecting the EI-1040 to the LabJack, the LabJack should be powered down prior to making the connection. After the connection is made then the combination can be powered up.

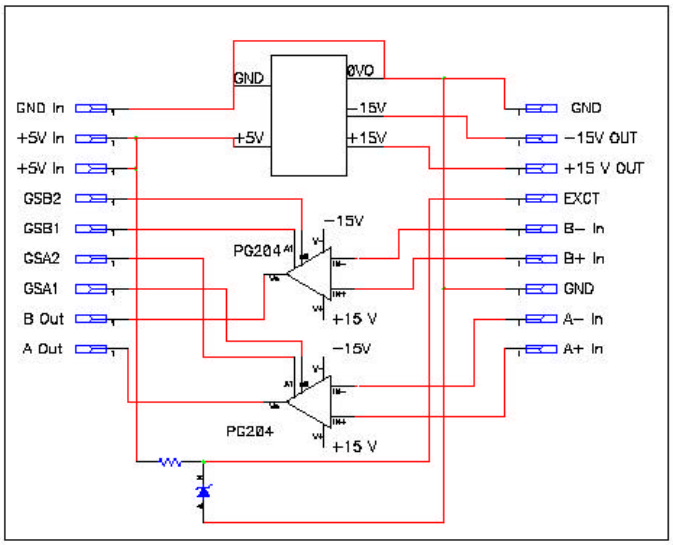
The gain of the EI-1040 can be programmed by the LabJack by connecting the gain select inputs GSA1, GSA2, GSB1, and GSB2 to the LabJack digital outputs. The configuration for the gain select is shown below:

GAIN	**TERMINAL**	**TERMINAL**
	GSA1 or B1	GSA2 or B2
1	0	0
10	1	0
100	0	1
1000	1	1

Combinations of gain can be selected so that for example one amplifier can have a gain of 10 and the other have a gain of 100. The voltage level of a 0 is typically ground and the level of a 1 is 2 volts above the digital ground (see the PG204A spec sheet for exact levels).

It should be noted that when the EI-1040/LabJack is powered from limited power sources such as notebook computers, bus-powered hubs, etc., there may not be enough current to supply both devices. A message from the computer should tell the user of this condition.

A functional block diagram of the EI-1040 is shown below.



The following table describes the function of the EI-1040 terminals:

LABEL	DESCRIPTION	LABEL	DESCRIPTION
GND In	POWER SOURCE GROUND	GND	SIGNAL GROUND
+5 In	5 VOLT FROM POWER SOURCE	-15V OUT	-15 VOLT USER AT 8 ma *
+5 In	SPARE 5 VOLT TERMINAL	+15V OUT	+15 VOLT USER AT 8 ma *
GSB2	GAIN STATE B2	EXCT	4.096 VOLT FOR EXCITATION **
GSB1	GAIN STATE B1	B- In	B AMP MINUS INPUT
GSA2	GAIN STATE A2	B+ In	B AMP PLUS INPUT
GSA1	GAIN STATE A1	GND	SIGNAL GROUND
B Out	B AMPLIFIER OUTPUT	A- In	A AMP MINUS INPUT
A Out	A AMPLIFIER OUTPUT	A+ In	A AMP PLUS INPUT

* Worst case current availability - actual current availability may be greater
** Current availability is 3 ma max

The instrumentation amplifiers used are Texas Instruments/ Burr Brown PGA204 parts. The specifications for these parts can be obtained on Internet at:

http://focus.ti.com/docs/prod/productfolder.jhtml?genericPartNumber=PGA204

Typical applications for this unit include: SIGNAL CONDITIONER, THERMOCOUPLE AMPLIFIER, STRAIN GAUGE AMPLIFIER, DATA ACQUISITION APPLICATIONS, SIGNAL FILTER, AUDIO AMPLIFIER, MICROPHONE AMPLIFIER

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